



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: )  
Peter A. Liken et al. )  
Serial No. 09/841,032 )  
Filed: April 24, 2001 )  
Title: SUPPORT RACK FOR )  
VIBRATORY TESTING OF )  
PRINTED CIRCUIT BOARDS )

Examiner: Tuan T. Dinh  
Art Unit: 2855

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Name: Richard W. White

  
Signature

July 25, 2002  
Date

**AMENDMENT**

Sir:

This is in response to the Office Action dated April 25, 2002.

The application is amended as follows:

**IN THE CLAIMS:**

Please rewrite claims 1-3 and 5 and enter new claims 17-20 as follows:

1. (amended) A circuit board support rack comprising:
  - a frame;
  - a board engagement platform fixed with respect to the frame;
  - a board retention member spaced from the engagement platform by a distance;
  - a first adjustment mechanism coacting with the frame and the retention member and permitting adjustment of the distance; and
  - a second adjustment mechanism on the retention member, such second adjustment mechanism being mounted for movement toward and away from the engagement platform while the distance remains substantially unchanged.

2. (amended) The rack of claim 1 wherein:

-the frame includes plural openings for attaching the rack to a vibratory table; and

*B1  
Cancelled*

-the first adjustment mechanism includes apertures spaced from one another, thereby permitting the distance to be adjusted in predetermined increments.

3. (amended) The rack of claim 2 wherein:

-the distance is measured along a first axis; and  
-the apertures extend along a second axis substantially parallel to the first axis.

5. (amended) In combination, a printed circuit board having first and second edges and a rack supporting the board, the rack comprising:

*B2*

- a frame;
- a platform mounted with respect to the frame and engaging the first edge;
- a board retention member spaced from the engagement platform by a distance;
- a first adjustment mechanism capable of adjusting the distance coacting with the frame and the retention member and maintaining the distance; and
- a second adjustment mechanism on the retention member and engaging the second edge;

and wherein:

-the platform and the second adjustment mechanism exert compressive force on the board.

17. The circuit board support rack of claim 1 wherein the first adjustment mechanism permits adjustment of the distance to enable the rack to receive circuit boards of various sizes between the board engagement platform and the board retention member.

*B3*

18. The circuit board support rack of claim 1 wherein the first adjustment mechanism permits adjustment of the distance in increments.

19. The combination of claim 5 wherein the first adjustment mechanism is capable of incrementally adjusting the distance to enable receipt of the circuit board between the platform and the board retention member.

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20. The combination of claim 11 wherein:

- the platform and board retention member are spaced apart from each other by a distance, and
- the distance is adjustable.

### Remarks

The Office Action has been reviewed with care and certain amendments made which are believed to place this application in condition for allowance. Applicants appreciate the attention of the Examiner to this patent application and the indication of allowability of claims 6-8, 13, 14 and 16.

It is first noted that the specification's disclosure was objected to regarding three occurrences of "row 47." Applicant calls attention to the amendment filed on April 12, 2002 in which the paragraphs on page 7, at lines 3-14 and lines 15-20 were amended to read as follows:

Referring particularly to FIGURES 1 and 2, the rack 10 includes a first adjustment mechanism 47 by which the dimension D1 may be selected in predetermined increments. Such mechanism 47 includes first and second rows of apertures 49, 51, respectively, in the first end panel 13 and third and fourth rows of apertures 53, 55, respectively, in the second end panel 15. While each such row 49, 51, 53, 55 may have a single row component 57 of apertures, smaller adjustment increments are facilitated when each row 49, 51, 53, 55 includes a side-by-side pair of such components 57 with particular apertures of one component, e.g., component

57a, being slightly vertically "staggered" from the corresponding apertures of the adjacent component 57b. Irrespective of whether rows or row components are used, the apertures 59 of a row component 57 are preferably arranged substantially vertically from one another.

The first adjustment mechanism 47 also includes a plurality of shoulder screws 61, four in the preferred embodiment. Each screw 61 extends through a respective aperture 59 in one of the four rows 49, 51, 53, 55, and threads into the retention member 39. Apertures 59 are preferably located and selected in such a way that in any vertical position of the retention member 39, such retention member 39 is parallel to the engagement platform 29 when the rack 10 is assembled for use.

It is believed that the April 12, 2002 amendment corrects the mistake which was identified in the Office Action and no further correction is necessary.

Claims 1-10 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which is regarded as the invention. Apparently the term "dimension" was not understood. The claims have been herein amended to avoid use of the term "dimension."

Claims 1-5 and 9-10 have been rejected under 35 USC 103(a) as being unpatentable over Chatel (U.S. Patent No. 5,506,751) in view of Sittig (U.S. Patent No. 5,954,122).

Claims 11-12 and 15 have been rejected under 35 USC 103(a) as being unpatentable over Chatel in view of Sittig and in further view of Wetzel et al. (U.S. Patent No. 5,804,751).

The Office Action states that Chatel discloses "a first adjustment mechanism (12; 13, column 5, line 6) co-acting with the frame and the retention member and permitting selection of the dimension." As seen in figures 1 and 5, Chatel provides for a "card cage" which includes "lateral panels" interconnected by a "electrically connecting panel." Chatel does not provide for any adjustment of the distance between the lateral panels. Rather, the lateral panels are connected to the connecting panel by screws 24 which fill apertures 50. Apertures 50 are provided only at the end of the connecting panel and Chatel does not provide for additional apertures to allow for adjustability. Such a configuration is typical for a cage which is intended for use with circuit boards of a constant size. Indeed, the Chatel cage does not provide for adjustment necessary for use with circuit boards of a different sizes and does not include any "adjustment mechanism."

As required by amended claim 1, the first adjustment mechanism must permit adjustment of the distance between the board retention member and the engagement platform. Such a requirement is not disclosed nor made obvious by any combination of the cited prior art.

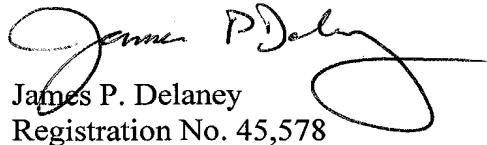
As required by amended claim 5, the first adjustment mechanism is capable of adjusting the distance between the board retention member and the engagement platform. This requirement is not disclosed nor made obvious by any combination of the cited prior art.

As required by claim 11, the platform and board retention member exert "compressive force on the boards." This requirement is not disclosed or made obvious by any combination of the cited prior art. Chatel discloses a rigid, non-adjustable connection between its side

panels and connecting panel. The Chatel rack is intended simply to house circuit boards. It is not intended for use during vibrational-type tests and is not intended to address the problems associated with such testing. As disclosed, the Chatel rack does not provide for adjustment of the distance between the lateral panels but requires the placement of the circuit board between the lateral panels by sliding the board into the space therebetween. Chatel does not disclose that the lateral panels exert any "compressive force on the boards" and, in fact, such a feature would likely result in the inoperability of the Chatel device since the boards could not be positioned between the non-adjustable lateral panels. Therefore, this requirement is not disclosed or made obvious by any combination of the cited prior art.

Because each of the independent claims include elements not disclosed or made obvious by the cite prior art applicant believes that all claims as amended are in proper form for allowance and early favorable action is earnestly solicited. The Examiner is invited to call the undersigned attorney if that would be helpful in facilitating resolution of any issues which might remain.

Respectfully submitted,



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